



<i>National Geographic</i> on Alternative Energy

Posted by [Super G](#) on July 20, 2005 - 9:11pm

In the mail today, I received the August issue of *National Geographic*. The cover story is "[Future Power: Where Will the World Get its Next Energy Fix?](#)" (full text [here](#)).

TOD readers may remember "[The End of Cheap Oil](#)" from the June 2004 issue. That article did a good job of showing how pervasive oil and oil-based products are in our society, but it didn't do much to communicate what running out of cheap oil really means for us. It was also conservative in reporting when the peak would occur, citing Colin Campbell (2016) and the USGS (2040). While that article was somewhat of a letdown, I thought they did an excellent job with global warming ("[Signs From Earth](#)", September 2004), so I came into this month's alternative energy article with an open mind.

Michael Parfit's article starts off by reminding us about oil's uncertain future. He repeats *NGM*'s conservative stance on oil depletion: "Oil, no longer cheap, may soon decline". *May?* He instead makes his case for alternative fuels based on the need to stem global warming. Parfit then describes his own experience with setting up solar panels on his roofâ€”from the ecstasy of energy independence to the agony of cloud cover. This personal anecdote sets the tone that the path to alternatives is going to be rocky.

The article then examines all of the contenders for oil replacements in turn:

- Solar: It's much cheaper than it used to be, but still expensive. Intermittency of sunlight is a problem that must be overcome with lots of batteries. On the land requirement:

At present levels of efficiency, it would take about 10,000 square miles (30,000 square kilometers) of solar panelsâ€”an area bigger than Vermontâ€”to satisfy all of the United States' electricity needs. But the land requirement sounds more daunting than it is: Open country wouldn't have to be covered. All those panels could fit on less than a quarter of the roof and pavement space in cities and suburbs.

- Wind: Europe is way ahead of the U.S. in electricity generation from wind (35 GW versus 7 GW). The article uses a great graphic to show how huge a wind turbine is (60 stories!) A lot of people complain about the aesthetics, but the author points out that they are popular in Denmark,

perhaps because many Danish turbines belong to cooperatives of local residents. It's harder to say "not in my backyard" if the thing in your backyard helps pay for your house.

Of course, intermittency is a problem here too.

- Biomass: We are reminded that it's already happening (ethanol blend in gasoline), but it's severely limited by land area (far less efficient per unit area than solar). However, the author doesn't point out that most fertilizer is petroleum-based. He mentions a plant called switchgrass, native to U.S. prairies, which grows faster and needs less fertilizer than corn, but entrenched political interests (corn and sugar lobby) are a problem there.
- Nuclear: We have only enough cheap uranium to last 50 years. Reprocessing could stretch out the supply, but generates plutonium and there is concern that it will get into the wrong hands.
- Fusion: Explains it nicely, and makes it clear that it's not coming anytime soon.

As mentioned above, the author's principal concern is global warming, and not oil depletion. For this reason, he does not emphasize that, with the exception of biomass, the alternatives discussed serve only as sources of *electricity*, and not vehicle fuel. As the readers of this site know, nothing can match oil for its portability, and oil depletion is so serious because of its impact on transportation. The author does discuss hydrogen, and does a good job of pointing out that hydrogen fuel cells are not necessarily clean or renewable (it all depends on how the hydrogen is generated). However, because he is not considering the consequences of near-term oil depletion, he does not address the urgency of building a hydrogen infrastructure.

The conclusion considers what it will take to get these alternatives off the ground, and echoes some things we have heard here at TOD:

Although some politicians believe the task of developing the new energy technologies should be left to market forces, many experts disagree. That's not just because it's expensive to get new technology started, but also because government can often take risks that private enterprise won't.

"Most of the modern technology that has been driving the U.S. economy did not come spontaneously from market forces," NYU's Martin Hoffert says, ticking off jet planes, satellite communications, integrated circuits, computers. "The Internet was supported for 20 years by the military and for 10 more years by the National Science Foundation before Wall Street found it."

Without a big push from government, he says, we may be condemned to rely on increasingly dirty fossil fuels as cleaner ones like oil and gas run out, with dire consequences for the climate. "If we don't have a proactive energy policy," he says, "we'll just wind up using coal, then shale, then tar sands, and it will be a continually diminishing return, and eventually our civilization will collapse. But it doesn't have to end that way. We have a choice."

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